

## Preparation and characterization of Poly (L-lactic acid) (PLLA) - Poly (butylenesuccinate) (PBS) blends for use as biomaterials

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Poly(L-lactic acid) (PLLA) - poly(butylenesuccinate) (PBS) blends have been mostly studied for packaging applications due to their complementary properties and biodegradabilities. These polymer blends also have a great potential to be used in biomedical field due their nontoxicity and capability of controlled rates of degradation. In this study PLLA- PBS blends were prepared by melt blending using a double-screw extruder in the presence of a poly ethylene oxide-propylene oxide block copolymer (PE 6200) ((EO)(11)-(PO)(28)-(EO)(11)) surfactant, to explore their use as biomaterials. Thermal and thermomechanical analysis of the PLLA/PBS blends at different weight ratios (90-10, 80-20, 60-40, 40-60, 20-80) in the presence of 1wt% surfactant was performed by DSC (Differential Scanning Calorimetry) and DMA (Dynamic Mechanical Analysis) respectively. The thermal transitions as well as the crystallinity of PLLA and PBS and the total crystallinity of the blends were determined from DSC scans. Scanning Electron Microscopy (SEM) was used to analyze the phase morphology of the blends. The degradation profiles of the melt and the solution cast blends at changing PBS content were determined in PBS buffer solutions at pH 7.4 and 37 °C. In order to study cell-biomaterial interaction in vitro, viability of the Human Umbilical Vein Endothelial Cells (HUVEC) on PLLA/PBS solution cast films was determined by using CellTiter 96® AQ<sub>ueous</sub> Non-Radioactive Cell Proliferation Assay (MTS). SEM was used to visualize cells on the surface of the films.

### Biography

Emre Kinaci has recieved his B.Sc degree in Chemical Engineering from Yeditepe University, İstanbul in 2011. He currently studies as a Ph.D student at the Chemical Engineering Department of Yeditepe University. His research area mainly includes biodegradable polymers, drug delivery and medical applications of polymers. He has been working on drug delivery applications as well as thermal and mechanical analysis of biodegradable polymers since 2010.

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